

ABSTRACT OF THE DISCLOSURE

5 A unique, micro-miniature reaction chamber template structure is disclosed for the fabrication of nanoscale molecular systems and devices. The structure is composed of multiple layers of silicon (either doped or intrinsic), Pyrex and various metals. The silicon may or may not be totally or partially covered with silicon dioxide. The Pyrex is chosen to be suitable for field-assisted bonding to silicon and the various metal layers are selected for their adherence to silicon or Pyrex, as well as their conductivity and their chemical reactivity. The basis structure may contain a number of tubes or fluidic pipes of varying cross sections. The structure consists of a layer of silicon bonded to a layer of Pyrex, which is in turn bonded to another layer of silicon and therefore, there is a composite structure which consists of a laminate of silicon glass and silicon. The glass is extremely thin and is Pyrex having sodium ions, which will be transported upon the application of a voltage to the structure to cause the sodium ions to be transported, leaving the dangling oxygen bonds in the glass or the silicon layers.

PTN\18960.1